

Lesson Log-3/12/04

Day #6 Length of Class-83 min.

What did you expect students to learn during the lesson? I expected the students to present their findings from the STS activity assigned last week in fulfillment of the requirements of their project. I expected students to share their views and weigh in on the subjects presented in class. Students had an opportunity to express their opinions on the subject investigated and the possibility of changing their views based on what was presented in class. I expected students to have a deeper understanding of what Embryonic Stem Cells are and how could they be used to heal spinal cord injuries. Students had an opportunity to learn from their fellow students about technology like Functional Electrical Stimulation used to assist injured persons. This was demonstrated in a videotape at the beginning of the unit and made an impression on some students, especially those interested in physical therapy careers. I expected students to recognize that all medical technology comes at a huge cost and has limitations. I arranged to have the school nurse loan us a wheelchair to have the students try to perform various school related tasks from a wheelchair. I wanted the students to examine the school and see if it is truly "accessible."

Describe the learning activities and the use of resources to support students' learning of the lessons' main concept and/or processes. As part of their requirements for the inquiry lab students had to describe their major findings for the class. I had students alternate their presentations. For example I had a student who completed a report on stem cells follow a student who investigated FES. This prevented students from tuning out the following material which was at times repetitive. For those students who had completed PowerPoint projects I allowed them more time than the five minutes and provided them the use of the SmartBoard for their presentation. I had students complete a short set of questions at the end of class for a couple of reasons. I wanted to allow the shy students to have another forum to tell me their opinions on the subjects presented today.

Describe how you monitored students' learning and what you found about their understanding of the lesson's main concepts. I have to admit that I considered this class a close knit community of learners, partially because of the small size, and partly because it is mostly female. But what I heard in class surprised me. These students were passionate about this issue from very different viewpoints. I have deeply religious students who consider human embryonic stem cell research to be akin to murder, and they were more in favor of treatment regimes that were similar to Functional Electrical Stimulation. I had a student, and I was unaware of this before, who had a close family member who suffered a spinal cord injury from

street violence. She was strong advocate for stem cell research no matter what the cost. Ironically, I know these girls are friends. What pleased me is that they shared these views in our classroom setting without hesitation. Reviewing the student responses to the post STS questions I distributed in class, I found that students used examples from other students' projects in their answers. This was clear evidence that they were able to learn from each other. For example, one student was able to offer that stem cells can be found in umbilical tissue, and this might be a better solution than using embryonic stem cells.

Describe the instructional adjustments you made in response to your findings about students' learning needs during the lesson. Students had to present their findings to the class, but much of what they found was very similar. It quickly became repetitive. There was a presentation in which one of the students made the statement that all kinds of diseases could be "cured" by using stem cells. This misconception had to be addressed immediately. I instructed the students that while stem cells show amazing promise, the use of them has not cured any diseases yet, and major technical problems have come up with using them and will continue to come up. I was pleased when a student added that stem cells are difficult to get from adults, and to get them from human embryos is allowed only on a limited basis. She also added that sometimes, when using them, they get trapped in scar tissue and do not always reconnect injured spinal cord tissue. One thing I noted is that while the students presented their findings they were less likely to describe their point of view on the issues. Perhaps this was a comfort issue. It's safer and easier to speak your mind while sitting behind a desk than in front of the class. I didn't force any student to weigh in on the controversy surrounding stem cells or FES while in front of the class, but most gave their opinions anyway. Once all the students who had completed the project presented, I asked the students to consider hypothetical situations to spark discussion. For example, I suggested the government might be willing to fund stem cell research and/or FES for every patient as long as they were not injured as a result of a crime (including speeding, drunk driving). Most students were able to say that it is almost impossible to do that because, if the government began spending money on this, then people have the right to have it available to everyone. I asked the student to discuss how President Bush's views on stem cells could possibly be affected by a personal tragedy. This sparked discussion over individual rights versus a societies' responsibility to pay for it.

GOOD JOB
TODAY

Biology
Block 2

32

Spinal Cord Injuries and Society

Thank you
for sharing your
viewpoints!

1. List and describe three (or more!) topics investigated by your classmates that you found interesting, informative or complimentary to what you investigated.

- stem cells can be extracted from the nose rather than a fetus
- stem cells are controversial because research needs a fetus and it's almost like killing a baby
- A million dollars worth of money that is need per life time to treat a person w/ SCI.

2. Do you think spinal cord injuries more of a problem for the individual living with the injury or for society as a whole? Explain?

I think SCI is a problem for both a individual and society because an individual has to pay \$1 billion a life time to treat SCI and society's tax rates may increase if they want to have a treatment for and insurance SCI be free for the injured.

3. How do you feel about the use of material from human embryos to possibly help injured spinal cord heal? Does this go against your personal beliefs?

I don't feel it right to use a human embryo, but to use other places like the nose to get the cells. I feel that if they use something else to get the cells, I would support it. The use of human embryos is against my belief but if they got the cells from other places like the nose it would not be against my beliefs.

4. Imagine that you are allowed to decide where all of the research funding (\$) gets spent in spinal cord injury research. If you only had two choices, one being to fund the development of assistive technology, such as access technology (Wheelchairs, FES, integrated electronics to help a person stay independent, etc). The second choice is to fund stem cell research. How would you divide up the money and why?

I would divide the money half and half because I would like to repair SCI rather than assist the people w/ SCI and use stem cells. But if stem cells don't work then we will still have money to research FES.

Lesson Log-3/15/04

Day #7 Length of Class-83min

What did you expect students to learn during the lesson? I expected students to display their knowledge of the nervous system, spinal cord and PNS by completing the assessment quiz with a class wide 80% average. I also expected the students to have unit concepts reinforced by this assessment. Although this block was 83 minutes, I allotted 50 minutes for the test to complete the unit within the time limit. Following the quiz, I allowed the remaining couple of students who had not turned in their STS project to present their reports to the class to reinforce the concepts learned through the STS project.

Describe the learning activities and the use of resources to support students' learning of the lessons' main concept and/or processes. Students took a test which was involved and comprehensive covering the topics from the previous classes. Included on this test were several types of questions both closed and open-ended. I did include questions which dealt with topics covered before this unit as I do on all formal assessments. This encouraged students to review "old" concepts and to see how they relate to the current ones being studied. I was pleased to see the performance on those questions was outstanding. This test included MRI images of real patients for which students were asked to identify the spinal cord and the disks that were impinging on it.

Describe how you monitored students' learning and what you found about their understanding of the lesson's main concepts. Considering the amount of material I asked my student to absorb in such a short time the outcome was acceptable. The class average was just below an 80%. Often the average is slightly higher for similar assessments. There were several questions that the class performed poorly on. Questions 25 and 26 which dealt with membrane potential and had associated diagrams gave many of the students problems. I feel this was due to two things. I did not emphasize this topic with the same depth that I covered other aspects of this unit, and the diagrams with the questions were hard to read.

Describe the instructional adjustments you made in response to your findings about students' learning needs during the lesson. One adjustment to traditional multiple-choice testing that I used was to allow students to narrow down an answer from the distracters. They did this by crossing out the wrong answers, putting a star next to their second choice, and placing their best choice on the line. If their final answer was wrong I checked to see if their

second choice was starred which would result in partial credit. Not all students took advantage of this, but it lowered the intimidation factor involved when the answer did not come quickly, and it discouraged guessing. Rather than penalize students for my poorly selected questions I chose to throw them out and added points to the score across the board. There were other problems with this assessment tool that will have to be addressed for future classes. I will include a section that is more similar to the CAPT and asks students direct questions that deal with the lab activity. Also, the use of a more realistic cross section of the spinal cord caused confusion to some students who probably would have done better using a more diagrammatic picture. I had used this in class during instruction, but it did not copy well for the test. I usually collect late homework only to check for understanding and not for grade, but because of the amount of work that I required the students to do in this unit, I did today. I did this because I wanted to allow them to learn from the assignments that they may have skipped simply to finish the STS project. One thing student had trouble with was the MR] image. It did not copy well and I had blocked an area out so students could write their answer. A lot of students were confused by the MRI and asked me what "the big white thing is." I had to explain to the class that it was simply a blocked out area for them to write their answer.